Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

thus become leaves and the homologues of the other floral organs. It is most likely that the branch which runs up each carpellary wall corresponds to the midrib of the leaf. If so, in this case one midrib produces an ovule, while the other does not, nor do the margins of the carpellary leaves.

To sum up, in conclusion, the testimony of the dandelion:

I. The inferior ovary is produced by an arrest in the development of the floral axis, the rising in a peripheral ring of the floral organs, and the gradual arching over of the cavity thus produced, by the carpellary leaves.

II. The syngenesious anthers are united by contact and pressure, but in no sense structurally.

III. The ovule is not produced directly from the axis, but is an outgrowth from the surface (probably the midrib) of a carpellary leaf.

NOTES ON THE CHÆTONOTUS LARUS.

BY PROFESSOR C. H. FERNALD.

IN the year 1874, I spent some time in the study of microscopic forms occurring in the fresh-water streams and ponds in and about Orono, Me. Among the animals observed was one which occurs here in considerable abundance, which I suppose to be *Chætonotus larus* Ehr.

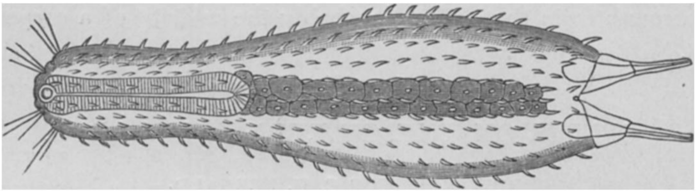
The descriptions and figures of this animal given by Ehrenberg, Dujardin and in the third edition of the Micrographic Dictionary, are superficial and unsatisfactory. To gain a more complete insight into the structure of this organism, I spent some time in the study of its anatomy and habits.

Chætonotus larus Ehr., is very common in the fine débris over the bottom of ponds, streams and springs, as well as in decomposing vegetable matters in watering troughs, and in cisterns which have no filters. I have found it at all seasons of the year, even in midwinter in springs which were frozen over.

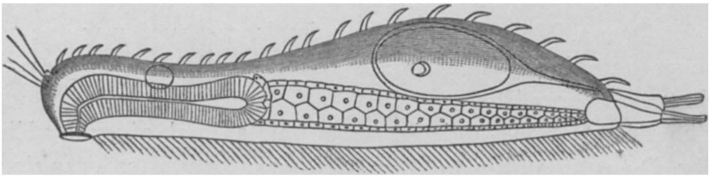
These animals are about $\frac{1}{225}$ of an inch long, oblong, rounded above, somewhat enlarged posteriorly, and armed on their upper surface with spines curving backward, those on the posterior part being the largest. The under surface is flat and without spines, but has four longitudinal bands of cilia. Upon the head are four colorless eyes, or what appear to be eyes, and also four clusters of long fine hairs starting out near the eyes, but a little below them. These appear to be tactile organs, as they keep them in constant motion, apparently feeling around as they move about slowly among the débris. The posterior end of the animal is bifid, ending in two tapering caudal appendages which are quite flexible, each being composed of two segments, and with the tips slightly expanded into a disk.

In the basal portion of each caudal appendage is a gland with a duct leading from it, and opening at the end of the appendage in the center of the disk. From the movements of this animal, I conclude that the disk serves as a sucker, and also that the secretion from this gland is adhesive in its nature, for except when swimming they stick the caudal appendages to any convenient object and hold themselves in place, or swing themselves to one side or the other as they may desire.

1



2



Chætonotus larus Ehr., magnified 750 diameters. 1, as seen from above; 2, as seen upon the side without the side spines.

The mouth opens on the underside, close to the anterior part of the body, through a more or less hardened ring, and the œsophagus passes up vertically about one third of the distance from the mouth to the top of the head, where it turns sharply up and back at an angle of about 45° for about the same distance, when it turns again and runs horizontally towards the posterior end for about one-third the length of the animal, when it expands into an œsophageal bulb. This opens into a straight intestine which runs through to the anus between the caudal appendages. The œsophagus is surrounded by a thick, dense, muscular tissue of circular fibers, and the intestine is surrounded by a layer of large nucleated cells, outside of which is another layer of much smaller ones which are more difficult to make out.

Directly above the œsophagus is a globular body or cavity, but I cannot conjecture what its functions are.

In the median line, above the intestine, is situated the ovary, in which is developed but one egg at a time. This egg is very large as compared with the size of the animal itself. The nucleus is plainly visible even before the discharge of the egg from the ovary. The oviduct is easily traced to the outlet immediately above the anus.

I have often seen this animal discharge its egg, which, although it is of such a large size, does not seem to cause it any inconvenience whatever. When one is moving about slowly and feeding quietly, all at once it stops, and bending over slightly, with an apparent muscular contraction, the egg is discharged, the time occupied being not much more than one second, after which the Chætonotus instantly returns to feeding as though nothing of importance had occurred. I have watched the development of the eggs at one time and another, though not continuously, and the young when nearly ready to hatch are of the same form and structure as the adult. but doubled up within the shell. I have also seen all sizes from the egg up to the adult, and although for want of assistance I have never been able to trace the entire development of one individual through, yet I have no doubt that these animals are never parasitic, and that they do not pass through any alternation of generations.

It is exceedingly curious and interesting to see with what facility they use the caudal appendages, sticking them to the glass slide or cover in such a manner that, by careful focusing, one can see the sucker-like action of the tips of these organs while they sway about one way and the other in the water. At the same time the bands of cilia on the under side are in constant motion, causing a current of water to pass along by the mouth, carrying their food in suspension, which they readily secure. Suddenly they let go from the slide, and the action of the cilia causes them to move through the water with great rapidity, till they reach some new feeding ground, where they again anchor themselves and fish for another meal.

If a rotifer or any other moving form happens to touch even the very extremities of the tactile hairs on their heads, they instantly retreat and shoot off in some other direction.

To enable me to make out the digestive tract more clearly, I fed some on indigo and others on carmine, but it was not a success. They did not take to that sort of food kindly. I saw only one Chætonotus take in a particle of the indigo, which readily and quickly passed along the œsophagus to the bulb, when it at once appeared to become conscious of having eaten some nauseating substance. It at once let go its hold with the caudal appendages, the action of the cilia ceased, and the Chætonotus gradually doubled up a little, and then with a spasmodic effort it attempted to throw up the particle of indigo. A reverse peristaltic action of the muscles of the œsophagus took place, which was plainly visible, sending the particle up about two thirds the distance to the mouth, when the action ceased, and it gradually went back again into the bulb. This was repeated several times, after which all action ceased, and the animal died without a further struggle.

For the purpose of making a more careful study with higher powers than I could use while they were moving about so actively, I put a little cyanide of potash under the edge of the cover, and this quickly dissolving and diffusing through the water on the slide, very soon killed them without inducing any changes to interfere with a critical examination of their structure.

These studies were made before I saw a paper by Ludwig, in Zeitschrift für wiss. Zoologie, 1876, which covers the ground so fully that I then laid my drawings and notes aside, not intending to publish them. Ludwig states that these animals are hermaphrodites, the testes being situated below the anus. He does not state whether mutual or self-impregnation takes place, but if the former I ought to have observed it, as I studied so many of them and for so long a time.

——:o:——

NOTES ON THE ABORIGINES OF COOPER'S CREEK, AUSTRALIA.

BY EDWARD B. SANGER.

THE tribes and dialects of Australian aborigines vary so much within short distances that it is a perplexing task to keep account of them. Systematic study, however, would probably